FINAL PROPOSED PLAN FOR ZONE D, OPERABLE UNIT 10, LANDFILL 7 AND FIRE PROTECTION TRAINING AREA 1

F.E. WARREN AIR FORCE BASE, WYOMING
JULY 2003

OVERVIEW OF THE PROPOSED PLAN

This Proposed Plan identifies the preferred alternative for Landfill 7 (LF7) and Fire Protection Training Area 1 (FPTA1) as well as the other alternatives considered. Most of FPTA1 is located over LF7. Together, they have been described as the LF7 complex. The US Air Force (USAF) is issuing this Proposed Plan under its public participation responsibilities under Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

Your comments will be considered in making decisions on the final remedy for the LF7 complex. Comments on the alternatives are welcomed during the public comment period from 5 August 2003 to 4 September 2003 and during the public meeting which will be held on 26 August 2003. Following the 30-day public comment period, the USAF will select a final remedy for the site in conjunction with the US Environmental Protection Agency (EPA) and the Wyoming Department of Environmental Quality (WDEQ). In response to your comments or new information, the preferred alternative may be modified or another response action may be selected.

INTRODUCTION

This Proposed Plan summarizes information which can be found in detail in the LF7/FPTA1 reports for the Remedial Investigation (RI) and Feasibility Study (FS). These reports are in the Administrative Record file for F. E. Warren Air Force Base which is located at the Laramie County Library in Cheyenne, Wyoming. The USAF, EPA, and WDEQ encourage the public to view these documents to better understand the site and Superfund activities proposed for the site.

PUBLIC MEETING

26 August 2003
7:00 p.m.

Little America Motel & Resort, Regency Room,
2800 West Lincoln Way

Cheyenne, Wyoming

Public Comment Period

5 August 2003 to 4 September 2003

For more information, see the Administrative Record at the following location:

Laramie County Library
2800 Central Avenue
Cheyenne, WY 82001-2702
(307) 634-3561
Hours: Mon -Thur
10:00 a.m. - 9:00 p.m.
Hours: Fri - Sat
10:00 a.m. - 6:00 p.m.

F. E. Warren covers approximately 5,866 acres near the city of Cheyenne (Figure 1). F.E. Warren has served different functions since it was originally a United States Army outpost in 1867. Its present mission is to provide operations, maintenance, and security support for Peacekeeper missiles and Minuteman III missiles.

The Installation Restoration Program (IRP) is the program under which most environmental concerns are handled on the base. At the time F. E. Warren was placed on the EPA's National Priorities List in February 1990, the IRP was in the process of investigating 20 individual sites. For managing investigations, the various sites are geographically divided into Zones A through E.

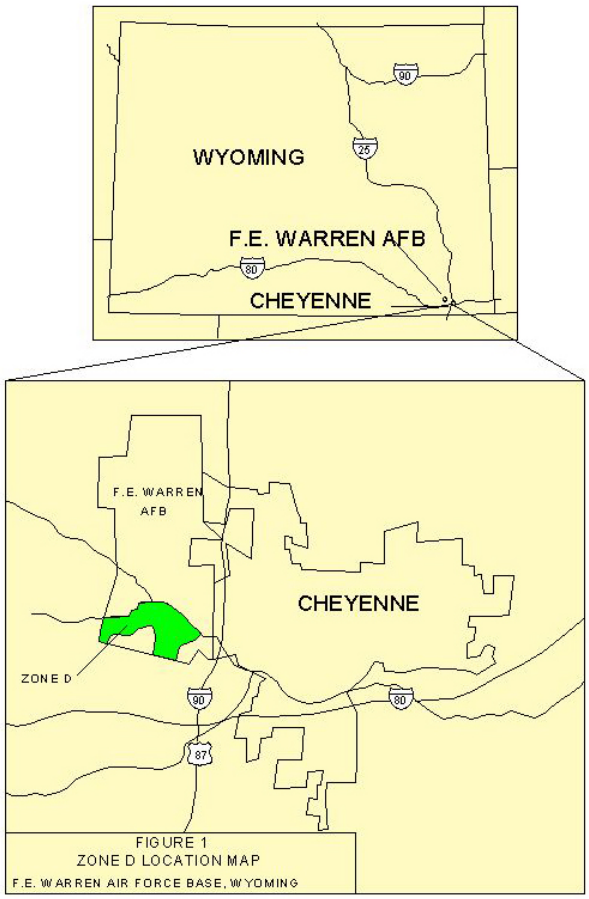

FIGURE 1
ZONE D LOCATION MAP
F.E. WARREN AIR FORCE BASE, WYOMING

SITE BACKGROUND

LF7 and FPTA1 (LF7 complex) are located in Zone D, in the southeastern portion of F.E. Warren just north of Burger King and northwest of the intersection of Old Glory and Missile Drive and south of Crow Creek (Figure 2). The LF7 complex is currently an open field and is not used for Base operations. North of the LF7 and FPTA1 area, across Crow Creek, is the Base gas-powered heat plant.

LF7 was operated as a sanitary landfill from the late 1930s to the early 1950s. LF7 consists of two disposal cells, Landfill 7a (LF7a) and Landfill 7b (LF7b). Trash included domestic, shop, and hospital waste from operations at the Base, which was burned and covered with topsoil as part of landfill operations. The area was later used for storage of gravel and asphalt. The FPTA1 area was used for fire protection training after the landfill was closed.

The FPTA1 area consists of three bermed depressions in the LF7b area, which were used for fire protection training at the Base. Flammable liquids were poured on the ground and ignited to simulate crash conditions. These liquids included solvents, waste oils, gasoline, and JP-4 jet fuel. An estimated 205 gallons of chloro-bromomethane, a fire retardant, was also used on the ground surface in 1966. Fire training activities may have continued after 1973 using recovered gasoline from Spill Site 1.

During the 1991 Installation Restoration Program investigation, the FPTA1 soils and groundwater were investigated. Several volatile organic compounds (VOCs) were found in the groundwater, but were recognized to be coming from the upgradient groundwater contamination coming from an area near the existing helicopter facility. Trichloroethene (TCE) was the most common VOC contaminant in soils and groundwater, originating from this upgradient source. Low-level total petroleum hydrocarbons (TPH) were detected near LF7b and are believed to have originated from the fire training activities.

A treatability study was performed in the LF7 and FPTA1 area involving a bioventing system from October 1995 to late 1996 to evaluate the effectiveness of in place air injection technology for remediation of petroleum-contaminated soils at FEW. The treatability study ended in October 1995 with no additional actions being carried forward.

A Surface Water Risk Assessment (SWRA) was conducted in 2000-2001 for Crow Creek, Diamond Creek, and the unnamed tributary. Crow Creek flows next to LF7 and FPTA1. Groundwater and runoff contribute to the surface water and sediments in Crow Creek. The main objective of the SWRA was to assess potential risks to human health and the environment as a result of contaminants found in sediment and surface water of all three creeks. Although contaminants were detected at low concentrations in the streams, the SWRA concluded there is little risk for either human health or ecological receptors based on the amounts found and the toxicological characteristics of the chemicals.

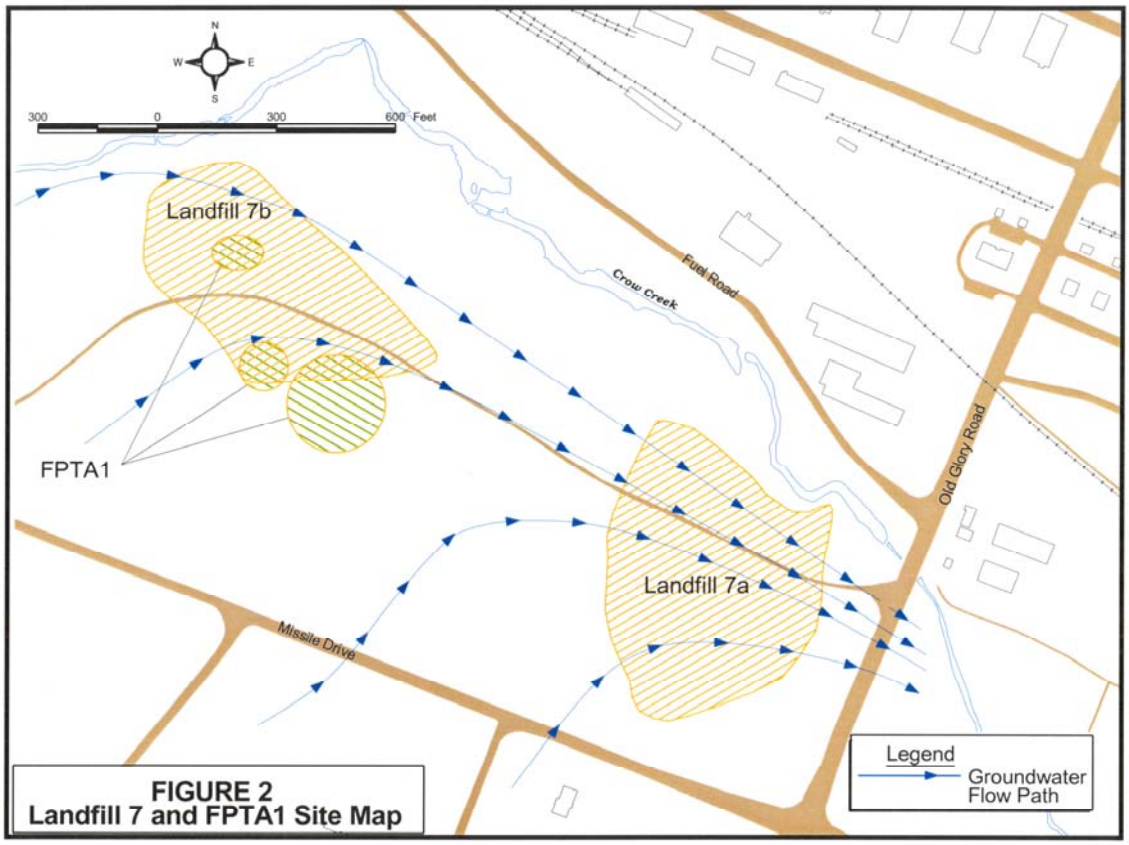

FIGURE 2
Landfill 7 and FPTA1 Site Map

During the 2001 Zone D remedial investigation (RI), LF7 and FPTA1 were investigated to determine the nature and extent, and fate and transport characteristics of contaminants from these areas. Waste was found near the surface in some areas, as well as below the groundwater table in other locations. Soil samples were found to contain contaminants slightly above EPA soil screening levels. Groundwater monitoring wells were sampled and found to contain slightly elevated levels of several contaminants. In general, contaminant concentrations in LF7a were found to be less than in LF7b and FPTA1.

SITE CHARACTERISTICS

The LF7 and FPTA1 area is located on a relatively flat floodplain adjacent to and south of Crow Creek. The ground surface is flat with small depressions throughout the landfill. Following rainstorms or snow melt, water collects in these low-lying areas, which increases infiltration volumes in these low areas as compared to an even infiltration across the entire landfill surface.

The northwest corner of LF7a is defined as a wetland area and is considered sensitive habitat for the Preble's meadow jumping mouse. Crow Creek is a slightly meandering stream that has been relatively stable over the past 60 years. Most stream channel movement over the years has occurred from road alignments and other manmade modifications. Beaver activity has also caused slight changes to the channel alignment. Because of the channel's movement, a meander bend has moved into the edge of the landfill along the northern boundary of LF7a. As a result, there is a potential for ashy materials from the Landfill to be further eroded into the creek.

The shallow groundwater beneath LF7 and FPTA1 is subject to influence from Crow Creek, upwelling of deeper groundwater, and shallow groundwater. Gradients in the shallow groundwater are steep and follow the break in topography along the south side of the landfill area. These different water sources mix in the gravelly soils under the LF7 complex and eventually discharge to Crow Creek.

LF7 covers approximately 12.68 acres and has an average waste thickness of 6 feet in Landfill 7a and 8 feet in LF7b. An estimated 10 to 15 percent of the waste is below the groundwater table based on average historical groundwater levels. About 62 percent of the landfill has less than 1 foot of top soil cover. The remaining 38 percent of the landfill has at least 1 foot or more of top soil.

3,565 feet of trenching was completed in 17 trenches across LF7a, LF7b, and FPTA1. Trenching exposed waste, which was mostly ash. Two unexploded anti-tank rockets were discovered during trenching operations in LF7b. It must be assumed that additional rockets may be present within the landfill.

In general, chemical results for several metals (i.e. zinc, copper, iron and lead) in waste samples were slightly higher than samples from the topsoil and native subsurface soil. The data also indicate that both inorganic and organic analytes are relatively fixed within the landfill waste based on evaluations used to estimate leaching potentials. This was confirmed by the concentrations found in the groundwater at or below background concentrations and/or upgradient concentrations in the groundwater. Several organic compounds were detected in subsurface soils and waste associated with FPTA1; however, significant impacts to groundwater in that area were not observed.

Concentrations for most constituents in groundwater decrease downgradient and continue to decrease in the downstream surface water. The decrease in groundwater contamination is partly due to the mixing of several water sources in the landfill and limited contaminant mobility.

Soil contaminants at LF7 and FPTA1 include low levels of polycyclic aromatic hydrocarbons (PAHs), dioxins and furans, VOCs, various metals, and some polychlorinated biphenyls (PCBs), and pesticides. Each of these contaminants is found in localized areas and does not represent a uniform distribution.

PAHs: PAHs are a group of chemicals that are components of crude and refined petroleum products and coal. The incomplete burning of coal, oil and gas, garbage, or other organic substances also produces PAHs. PAHs are mostly associated with FPTA1 where organic materials may not have burned completely. PAHs found at LF7 and FPTA1 include benzo(a)pyrene, benzo(a)anthracene, and benzo(b)fluoranthene.

Dioxins and Furans: These are found in the environment as chemical byproducts and are not intentionally manufactured. At LF7 and FPTA1, dioxins and furans are likely associated with incomplete combustion of organic materials.

VOCs: VOCs are not found naturally in the environment and are usually manufactured as fuels, solvents, or degreasers. VOCs found at LF7 and FPTA1 include TCE, *cis*-1,2-dichloroethylene, *trans*-1,2-dichloroethylene, and toluene.

PCBs and Pesticides: These contaminants are also manmade. They are contained in chemicals that were widely used as fire prevention and insulation fluids in the manufacture of transformers and capacitors. The concentration of 4,4□-DDE was elevated in one sample taken downwind of the landfill areas and is most likely attributable to routine pesticide application of 4,4□-DDT at the Base. Aroclor 1254 and 4,4□-DDT were also detected at slightly elevated levels in landfill waste samples.

Metals/Inorganic Constituents: Metals/inorganics can occur as a result of manmade sources or naturally from weathering of sediment and bedrock. Metals/inorganics concerns at LF7 and FPTA1 include arsenic, selenium, lead and total chromium. Several of these metals are found in background samples across the Base in soil, sediment, surface water, and groundwater.

Only iron and manganese concentrations increase slightly at surface water locations downstream of LF7 and FPTA1. These metals are common throughout the Base in sediment, soil, and surface water.

There are a few other constituents in the soil and waste that are slightly elevated due to historical landfill operations; however, these constituents do not significantly impact the groundwater or surface water systems. The highlighted box "*Contaminants of Interest*" address constituencies that were elevated above background concentrations. These constituents were evaluated for risk to human health and the environment.

REMDIAL ACTION OBJECTIVES (RAOs)

RAOs identified for LF7 and FPTA1 are as follows:

1. Reduce potential leaching through the landfill materials by minimizing infiltration from storm water that may pond on the landfill surface.
2. Improve the long-term stability of the landfill by controlling surface water runoff and erosion from wind and water.
3. Minimize contact with landfill materials that create a physical hazard to humans.
4. Restore groundwater to beneficial use, which in this case is restoration of iron and manganese to background conditions. Background concentrations are best evaluated through future monitoring to address temporal and spatial variations. If iron and manganese associated with groundwater at Landfill 7 are established to be within background, there will be no further requirements for restoration.

SUMMARY OF SITE RISKS

LF7 and FPTA1 are currently located in an open field and are not used for Base operations.

1. Human Health Risk: Possible exposures in the future include child and adult residents, on-site workers, adult and child recreational visitors, and construction workers. Using these as assumed exposures; the assessment indicates no unacceptable risk to human health from chemicals in the soils.

2. Ecological Risk: Low to moderate adverse effects to small mammals and low risks to birds are possible from exposure to several metals and two organic compounds in surface soils.

3. There is no apparent risk to soil invertebrates in surface soil. Low risks were estimated for plants exposed to selenium in surface soils and lead in shallow subsurface soil.

The USAF, EPA, and WDEQ agree that the Preferred Alternative identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, is necessary to ensure the long-term stability of the landfill complex.

SUMMARY OF REMEDIAL ALTERNATIVES

Remedial alternatives for LF7 and FPTA1 alternatives are numbered to correspond to the alternatives presented in the FS. The costs and time to achieve RAOs for each alternative are summarized in Table 1.

Alternatives 2, 3, and 4 will include long-term monitoring (LTM). For costing purposes, 30 years of LTM has been estimated. The goal of this LF7/FPTA1 LTM program will be to establish baseline groundwater concentrations upgradient and downgradient of the landfill complex, and to detect contaminants that may leach from waste in the future. Surface water will be monitored as part of the FEW Basewide LTM program.

Alternative 1 No Action

Regulations governing the Superfund program require that the "no action" alternative be evaluated to establish a baseline for comparison. This alternative consists of leaving Landfill 7 soils and waste in their current condition, and access to and use of the area would not be restricted. The No Action alternative will not meet any of the four RAOs.

Alternative 2 Institutional Controls

Alternative 2 consists of physical and/or administrative controls to limit access and development at Landfill 7/FPTA1. Landfill 7 will be permanently identified as a landfill area, which will need to be maintained into the foreseeable future. Access to the area will be controlled and activities inconsistent with the operation and maintenance of the area prohibited. Soils and wastes will be left in their current location. This alternative is easily implemented but will not meet the RAOs.

Alternative 3 Limited Action

Alternative 3 consists of limited actions for the soils and waste material at the site. This alternative includes (1) adding a minimum 1-foot soil cover over waste where less than 1 foot of soil currently exists; (2) re-grading the two landfill cells to eliminate ponding, reduce localized infiltration, reduce erosion, and promoting drainage; (3) planting native vegetation over the landfills that will inhibit erosion and provide plant respiration to reduce infiltration; (4) stream bank stabilization; and (5) implementing institutional controls to limit access and development of the site. The stream bank adjacent to Landfill 7a will be stabilized to prevent the erosion of waste materials exposed in the stream bank. Site activities are expected to take about 4 weeks to complete. This alternative has minimal negative short-term effects. It reduces contaminant mobility; however, it does not reduce the toxicity or volume of the contamination except by natural attenuation processes. This alternative will meet all four RAOs.

Alternative 4 Engineered Landfill Cap

Alternative 4 involves installing a low-permeability cap over LF7 and part of FPTA 1, stabilizing the creek's stream bank, and grading and revegetating the area. This alternative is estimated to take about 8 to 10 weeks to implement. This alternative does not reduce contaminant toxicity or volume; however, it would reduce the mobility of many types of contaminants present in the landfill complex. This alternative will meet all four of the RAOs. However, this alternative could result in the permanent loss of a small area of riparian habitat along Crow Creek.

Alternative 5 Excavation and Removal

Alternative 5 involves excavating LF7 and FPTA1 and disposing of the waste material off-site at a licensed landfill facility. The excavations will be backfilled with clean soil brought in from an off-site location. This alternative will also take the longest to implement – about 8 months. Although, this alternative does not involve treatment, the volume, mobility, and toxicity of contaminants at the site are lowered because the waste is removed.

EVALUATION OF ALTERNATIVES

In accordance with EPA guidance, the nine criteria listed in Table 2 are used to evaluate the different alternatives individually and against each other to aid in selecting a remedy. This section of the Proposed Plan summarizes the relative performance of each alternative against the nine criteria, noting how each compares to the other options under consideration.

1. Overall Protection of Human Health and Environment

Alternative 3 reduces ponding and excess infiltration, stabilizes the Crow Creek stream bank, reduces erosion, and limits potential human contact with waste and unexploded ordnance (UXO) through institutional controls and by the addition of one foot of soil cover.

Alternative 4 constructs an engineered landfill cap and stabilizes Crow Creek stream bank. This alternative eliminates the potential for human contact with waste and UXO through institutional controls and by the addition of an engineered landfill cap.

Alternative 5 protects human health and the environment by removing waste and impacted soil, making erosion of waste and infiltration irrelevant.

Alternatives 1 and 2 do not meet this criterion because they do not address landfill stability or infiltration, although Alternative 2 (Institutional Controls) does limit human contact with waste and any UXO that might be exposed in the future. Because Alternatives 1 and 2 do not meet this threshold criterion, they will not be included in the rest of the comparative analysis of alternatives.

2. *Compliance with* ARARs

Alternatives 3, 4 and 5 comply with their respective action-, chemical-, and location-specific ARARs. Each alternative will reduce or eliminate the potential impacts of Landfill 7 due to its design and setting. Alternative 5 has the maximum number of ARARs to meet.

3. *Long-term Effectiveness and Permanence*

Alternative 5 (Excavation/Removal) provides the best long-term effectiveness and permanence because waste and impacted soils will be removed from the site. Alternatives 3 and 4 result in similar, low levels of residual risk because both stabilize the landfill materials against erosion, and reduce (Alternative 3) or eliminate (Alternative 4) localized infiltration.

Alternative 5 achieves the highest reliability and adequacy of controls. Capping a landfill is the presumptive remedy for CERCLA sanitary landfill sites. The reliability and adequacy of controls for Alternatives 3 and 4 are good. Alternatives 3 and 4 require a similar amount of O&M to establish and maintain vegetation and to monitor and repair erosion. In addition to establishing vegetation and repairing erosion, the Engineered Landfill Cap will require a greater long-term maintenance program to maintain the integrity of the cap and liner. Alternative 5 requires negligible O&M in the form of stream bank inspection to ensure minimal erosion.

4. *Reduction of Toxicity, Mobility, or Volume of Contaminants Through Treatment*

None of the alternatives reduce toxicity, mobility, or volume through treatment. However, Alternatives 3, 4, and 5 reduce mobility by containment. The most effective reductions are achieved by Alternative 5, which removes the waste from the site. Alternative 4 uses a low-permeability cap to eliminate infiltration, and more effectively reduces the likelihood of leachate formation and migration than Alternative 3.

TABLE 1

SUMMARY OF REMEDIAL ALTERNATIVE COSTS AT LANDFILL 7 AND FPTA1

Alternative	Capital Cost[2]	O&M Cost	Net Present Value	Time to meet RAOs
1. No Action	$ 0	$ 0	$ 0	NA
2. Institutional Controls	$ 10,893	$ 755,769	$ 1,431,071	NA
3. Limited Action	$ 1,374,437	$ 1,165,849	$ 3,709,851	1 year
4. Engineered Landfill Cap	$3,817,993	$ 1,383,239	$ 6,632,387	1 year
5. Excavation and Removal	$ 8,061,079	$ 101,446	$ 8,285,761	2 years

Notes:

[1] Costs were calculated using the RACER 2000 cost-estimating program, including Remedial Design Costs.

NA = not applicable

O&M = operations and maintenance

RAO = remedial action objective

Alternative 3 reduces contaminant mobility by reducing localized infiltration, therefore reducing the likelihood of leachate formation and migration.

5. Short-term Effectiveness

Alternatives 3 and 4 would have minimal impacts on the community and workers because the remedial activities would be limited to the surface of LF7 and FPTA1, minimally exposing workers to landfill waste. For Alternatives 3 and 4, potential impacts from the increased traffic would be moderated by the relatively short durations of these two alternatives.

In Alternative 5, a large volume of heavy truck traffic over a relatively long period could potentially impact military personnel, visitors, and employees at the businesses south of LF7/FPTA1 and along the haul route, although the most likely route is not densely populated.

Workers implementing Alternative 5 will be excavating, handling, and transporting landfill material, introducing a potential for exposure. Additional exposure to unexploded ordnance may occur during excavation.

The greatest potential for environmental impacts would be introduced during the implementation of Alternative 5. For all alternatives, engineering controls and best management practices will be implemented to minimize potential impacts to personnel and the environment.

Alternative 5 has the longest remediation time of about 8 months. Alternative 4 is the next shortest time of 8 to 10 weeks. Of the active methods, Alternative 3 has the shortest remediation time of

TABLE 2 – EVALUATION CRITERIA FOR SUPERFUND REMEDIAL ALTERNATIVES

Threshold Criteria - Criteria must be met before an alternative can be considered as a remedy	**Overall Protection of Human Health and the Environment** describes how an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.
	Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) evaluates whether the alternative meets federal and state environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.
Balancing Criteria – Relative tradeoffs between different criteria are evaluated	**Long-Term Effectiveness and Permanence** considers the ability of an alternative to maintain protection of human health and the environment over time.
	Reduction of Toxicity, Mobility, or Volume of Contaminants Through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of the principal contaminants, their ability to move in the environment, and the amount of contamination present.
	Short-term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.
	Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
	Costs include estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to –30 percent.
Modifying Criteria – Evaluate whether remedy is supported by state and community after the public comment period	**State/Support Agency Acceptance** considers whether the State agrees with or opposes the preferred alternative. WDEQ reviews and comments upon all important documents throughout the process.
	Community Acceptance considers whether the local community agrees with or opposes the preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

about 4 weeks.

6. Implementability

These alternatives can be implemented without unusual administrative or technical challenges. Alternative 3 is the least complex and most easily implemented alternative involving active remediation. Implementing Alternatives 4 and 5 require additional engineering and technical expertise, and are more difficult to implement. Alternative 5 presents the most challenges due mainly to waste handling and disposal. Specifically, encountering additional UXO or other waste not characterized during trenching could delay remediation or add cost, and removing waste in the saturated zone will present technical challenges.

7. Costs

Total costs in net present value are summarized below:

Alternative 1 – No Action	$0
Alternative 2 – Institutional Controls	$1,431,071
Alternative 3 – Limited Action	$3,709,851
Alternative 4 – Engineered Landfill Cap	$6,632,387
Alternative 5 – Excavation and Removal	$8,285,761

8. State/Support Agency Acceptance

EPA and the State of Wyoming support the preferred alternative: Alternative 3 - Limited Action.

9. Community Acceptance

Community acceptance of the preferred alternative will be evaluated after the public comment period ends and will be described in the Record of Decision (ROD) for the site.

SUMMARY OF THE PREFERRED ALTERNATIVE

After careful analysis and consideration, Alternative 3 (Limited Action) has been chosen as the proposed remedy. This remedy consists of adding about 38,000 loose cubic yards of clean fill to areas where the soil cover is less than 1 foot thick (Figure 3 below). It also involves regrading and revegetating the landfill and FPTA1 areas as well as stabilizing a portion of Crow Creek along LF7a to prevent future erosion of landfill material. Finally, this alternative includes 30 years of long term monitoring.

The preferred remedy is Alternative 3 – Limited Action. This response involves:

- Adding a minimum 1-foot soil cover (approx. 38,000 cubic yards) over Landfill where less than 1 foot of cover currently exists,
- Regrading the two landfill areas to eliminate storm water ponding, reduce soil erosion, and promote drainage,
- Planting vegetation over the landfill areas to inhibit erosion and reduce storm water infiltration,
- Stabilizing the stream bank to prevent additional erosion of exposed waste along Crow Creek, and
- Perform a long-term groundwater monitoring program to monitor the effectiveness of the remedy.

This action will reduce contaminant mobility by reducing storm water infiltration and erosion. However, contaminant toxicity and volume will not be reduced, except by natural attenuation processes.

The preferred alternative will be protective of human health and the environment, will comply with requirements from other laws (ARARs), and will represent the best alternative among the balancing criteria considering the relatively low-level risks posed by LF7. The key balancing criteria are cost and implementability, where the preferred alternative addresses the potential risks

at the lowest cost and is the most easily implemented. The preferred alternative also offers the least impact and inconvenience to the community and nearby sensitive ecological habitats. Maintained soil covers are reliable in the long term and will reduce potential contaminant mobility. The engineered landfill cap offers little extra reduction of potential risks at almost twice the cost. Excavation and removal is the most costly, most difficult to implement, would likely inconvenience the community and may not be justified considering the low level of risks posed. Some level of long-term operations and maintenance would be required even if LF7 were excavated.

COMMUNITY PARTICIPATION

The USAF, EPA, and WDEQ have been providing information regarding the cleanup of F.E. Warren to the public through public meetings, the Administrative Record for the site, quarterly newsletters, direct mailing to interested parties and announcements published in the *Wyoming Tribune-Eagle*. The USAF, EPA, and WDEQ encourage the public to gain a more comprehensive understanding of the site and the Superfund activities that have been conducted at the site. The dates for the public comment period; location and time of the public meeting; and the locations of the Administrative Record files; are provided on the front page of this Proposed Plan.

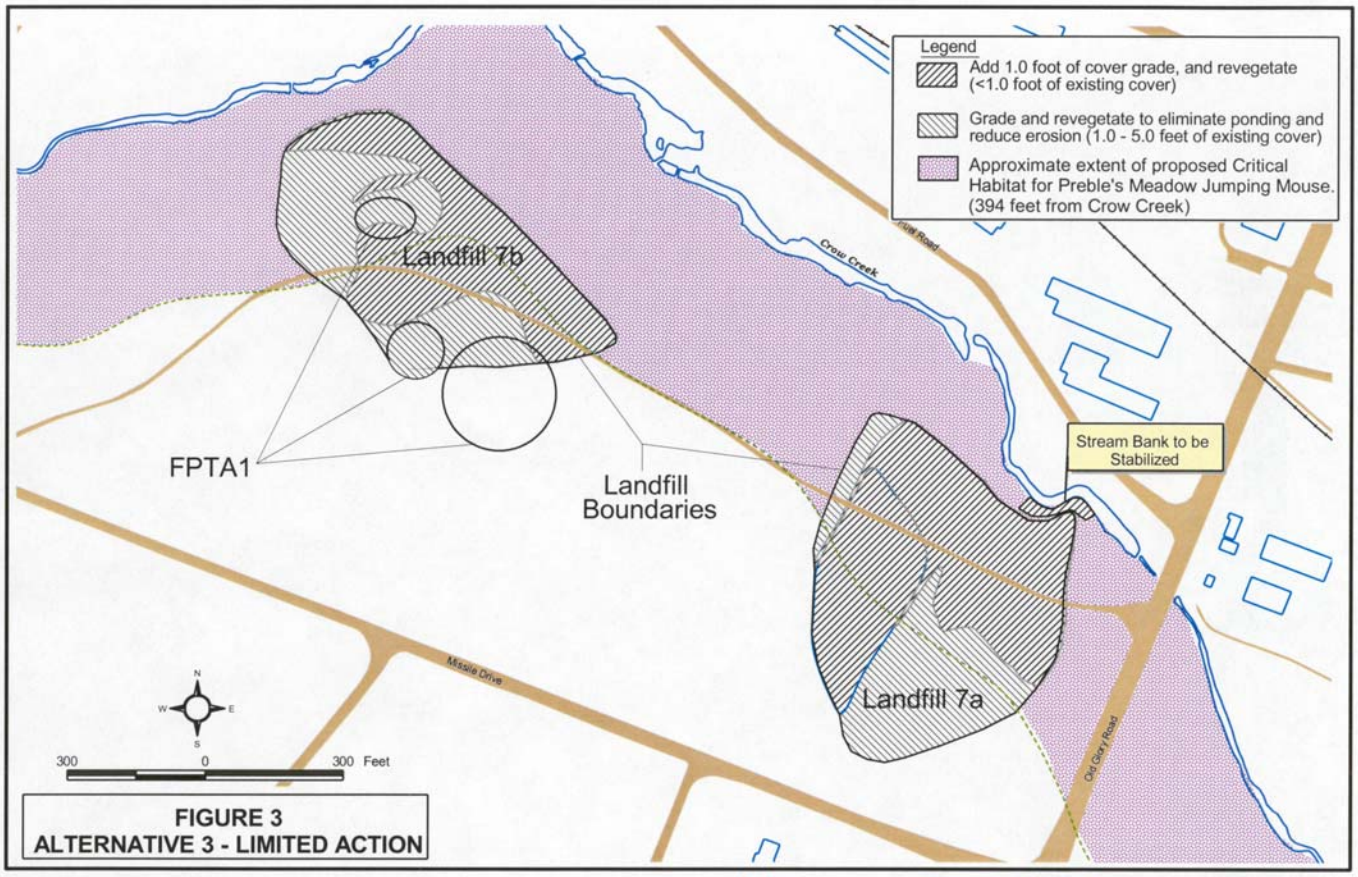

FIGURE 3
ALTERNATIVE 3 - LIMITED ACTION

GLOSSARY OF TERMS

Specialized terms used in this Proposed Plan are defined below:

Administrative Record – a record of all documents and correspondence for the Installation Restoration Program under CERCLA.
Analyte – the sample constituent whose concentrations is sought in a chemical analysis.
Applicable or relevant and appropriate requirements (ARARs) – the federal and state environmental laws that a selected remedy will meet. These requirements may vary among sites and alternatives.
Groundwater – underground water that fills pores in soils or openings in rocks to the point of saturation.
Long-term monitoring – Physical and chemical measurements over time (several years) to evaluate performance.
Monitoring – Ongoing collection of information about the environment that helps gauge the effectiveness of a cleanup action.
Operations and maintenance (O&M) – running a treatment system and doing needed repairs.
Organic compounds – carbon compounds, such as solvents, oils, and pesticides. Most are not readily dissolved in water.
Present worth analysis – a method of evaluation of expenditures that occur over different time periods. By discounting all costs to a common base year, the costs for different remedial action alternatives can be compared on the basis of a single figure for each alternative. When calculating present worth cost for Superfund sites, total operations and maintenance costs are to be included.
Remedial Action Objectives (RAO) – the stated objectives for actions at the site.
Revegetate – to replace topsoil, seed, and mulch on prepared soil to prevent wind and water erosion.

ACRONYMS USED IN THIS PROPOSED PLAN

ARAR	applicable or relevant and appropriate requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EPA	Environmental Protection Agency
FEW	F.E. Warren Air Force Base
FPTA1	Fire Protection Training Area 1
IRP	Installation Restoration Program
LF7	Landfill 7
LTM	long term monitoring
NCP	National Oil and Hazardous Substances Pollution Contingency
O&M	operations and maintenance
PAH	polycyclic aromatic hydrocarbons
RAO	Remedial Action Objective
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SWRA	Surface Water Risk Assessment
TCE	trichloroethene
USAF	United States Air Force
UXO	unexploded ordnance
VOC	volatile organic compound
WDEQ	Wyoming Department of Environmental Quality

USE THIS SPACE TO WRITE YOUR COMMENTS FOR SUBMITTAL OR PRESENT YOUR COMMENTS VERBALLY AT THE PUBLIC MEETING

Your input on the Proposed Plan for Landfill 7, Zone D is important to the USAF. Comments provided by the public are valuable in helping the USAF select a final cleanup remedy for the site.

You may use the space below to write your comments, then fold and mail. Comments must be postmarked by **4 September 2003**. If you have any questions about the comment period, please contact John Wright at (307) 773-4147 or submit your comments to the USAF via email at the following e-mail address: john.wright@warren.af.mil.

Name _____

Address _____

City _____

State _____ **Zip** _____

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